睡眠時無呼吸症候群の心臓交感神経機能及びQT間隔のバラツキとレプチン分泌動態

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はじめに

閉塞性睡眠時無呼吸低呼吸症候群(obstructive sleep apnea-hypopnea syndrome:OSAHS)は本邦においても成人男子の数%以上にみられる頻度の高い症候群である. OSAHS は高血圧発症の独立因子であることは米国の大規模試験で最近明らか になったが, 心・脳血管障害発症により予後が悪化するとも言われている. また, OSAHS70%以上は肥満を示すが, OSAHS は肥満関連脂質代謝異常にも関与するとも言われている.

本研究の目的は, 心臓死発症の独立因子である心電図上の QT 時間の最大値と最小値の差 QT dispersion を OSAHS 患者で治療前後に検討し, 心臓交感神経機能との関連を検討することと, 交感神経機能, 脂質代謝に大きく関与するレプチンの分泌動態を OSAHS 患者で治療前後に検討することである.

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Nakamura T, Chin K, Shimizu K, Ohi M, Mishima M. Effects of nCPAP therapy on QT dispersion in patients with obstructive sleep apnea-hypopnea syndrome.

Abstract

Objective: To test the hypothesis that QT dispersion, which is defined as the longest QT interval minus the shortest QT interval, in patients with obstructive sleep apnea-hypopnea syndrome (OSAHS) changes with nasal continuous positive airway pressure (nCPAP) therapy.

Methods: We studied 48 patients with OSAHS [45 men and 3 women; age 45.9±10.8 yr, mean±SD; body mass index (BMI) 30.2±4.3 kg/m^2 and apnea-hypopnea index (AHI) 51.9±18.5 /hr] who underwent polysomnography before nCPAP was started and on the first night of nCPAP. We excluded patients with cardiac disease or arrhythmia sufficiently severe to require treatment. Electrocardiograms (ECGs) were recorded in these patients for 30 seconds before, during, and after sleep, during each polysomnography, and in the morning about one month later to calculate ECG values including the QT interval. ECGs were also recorded in 26 age-matched normal subjects (24 men and 2 women; age 45.9±13.4 yr and BMI 23.7±2.2 kg/m^2) in the morning to obtain normal ECG values. All data were subjected to nonparametric tests.

Results: Morning values for the heart rate-corrected QT interval (QTcI) and QTc dispersion (QTcD) did not differ in OSAHS patients from normal subjects before, after one night or after one month of nCPAP therapy; Morning values for QTcI and QTcD were 423.6±26.2 mm$^{1/2}$ and 60.1±12.8 mm$^{1/2}$ before nCPAP, 421.4±24.6 and 57.0±12.3 after one night nCPAP, and 426.6±28.1 and 57.6±12.5 after one month nCPAP, respectively, in OSAHS patients vs 427.6±22.6 and 59.5±16.0, respectively, in normal subjects. QTcI during sleep did not change with one night nCPAP (434.4±38.3 mm$^{1/2}$ before nCPAP vs 426.3±24.3 with one night nCPAP). Meanwhile, QTcD during sleep significantly decreased with one night nCPAP (65.0±14.5 mm$^{1/2}$ before nCPAP vs 50.5±11.3 with one night nCPAP, $p<0.0001$). QTcD during sleep before nCPAP was significantly correlated with mean arterial oxygen saturation (SaO2) ($r=-0.425$, $p=0.004$) and the percentage of time that SaO_2 was below 90% ($r=0.347$, $p=0.017$) during sleep before nCPAP. The reduction in QTcD during sleep with one night nCPAP was significantly correlated with the reduction in AHI ($r=0.366$, $p=0.012$).

Conclusions: The present study suggests that nCPAP therapy decreases nocturnal myocardial electrical instability in patients with OSAHS even in the absence of cardiac disease or severe arrhythmia.